

**REMARKS**

A request for continued examination (RCE) was filed in the above-referenced application on March 24, 2004, wherein the submittal filed with the RCE was an amendment canceling each of the previously pending apparatus claims, and pursuing a plurality of method claims. However, a restriction requirement had already been issued in the case wherein the applicant elected to pursue apparatus claims and let the method claims be withdrawn. Accordingly, the amendment submitted with the RCE was in error and the Examiner issued a subsequent action on May 28, 2004 indicating that the amendment filed with the RCE was not fully responsive, and providing applicant with a one month period for responding. In response to that action, applicant is submitting another amendment modifying the previously pending apparatus claims. In a telephone conversation with Examiner Piazza-Corcoran, applicant confirmed that the amendment filed with the RCE was not entered and thus this amendment modifies the claims as they stood prior to the filing of the RCE. Applicant appreciates the courtesies extended by the Examiner in that telephone conversation. In light of all the foregoing, applicant respectfully submits that claims 10, 11, 16, 17 and 35 are pending and at issue.

Referring now to the substance of the final office action issued in the case, the pending apparatus claims were rejected as anticipated and/or rendered obvious by the prior art. Due to the amendments made by way of this response and the following arguments, applicant respectfully submits that each of these anticipation and obviousness rejections should be withdrawn.

Firstly, the claims were rejected as anticipated by either of Wallick, U.S. Patent No. 5,292,391, or Wallick, U.S. Patent No. 5,332,458, both of which disclose the same basic apparatus and method for manufacturing corrugated paperboard. However, applicants respectfully submit that the Wallick references fail to disclose each and every element of the pending claims and therefore the anticipation rejection should be withdrawn.<sup>1</sup>

Claim 10, has been amended to specify, *inter alia*, an apparatus for manufacturing corrugated product comprising a water supply device applying water to only a

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<sup>1</sup> "Anticipation under 35 USC §102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention. "Rockwell International Corp. v. United States 47 USPQ2d 1027 (Fed. Cir. 1998).

plurality of crests on a first side of a medium, and a starch supply device applying starch to only a plurality of crests on the first side of the first web after the water supply device has applied water to the plurality of crests, wherein the water and starch combine to form an adhesive securing the first and second webs together.

The Wallick references fail to disclose such elements. In both the Wallick references, the material used to join the corrugated web to the facing sheet is referred to as "glue", or a "typical bonding adhesive (commonly a starch solution)". The adhesive is applied at a glue station 42 to only the flute tips. As a separate application, a resin material such as isocyanate is sprayed or otherwise applied to the medium as a strength enhancing material, not an adhesive for joining the webs together. In light of this, it is clear that a first device for applying water only to the tips or flutes of the corrugated board is not provided, much less one wherein starch is then applied to the wetted tips such that the water and starch combine to form the adhesive joining the corrugated board to the facing sheet.

In light of this, applicants respectfully submit that the Wallick references fail to disclose each and every element of the pending claims and that therefore the anticipation rejections based thereon should be withdrawn.

Turning now to the obviousness rejections, the claims were also rejected as obvious over either of the Wallick references in further view of Westphal, U.S. Patent No. 5,607,508 or Miller, U.S. Patent No. 5,609,711 or Swift, U.S. Patent No. 1,199,508. Again, applicants respectfully submit that the cited references fail to disclose each and every element of the pending claims and that therefore the obviousness rejection should be withdrawn. Moreover, the cited reference fails to provide any motivation or suggestion to be modified or combined to arrive at the pending subject matter.<sup>2</sup>

As stated above, the claims have been amended to specify, *inter alia*, an apparatus for manufacturing a corrugated product having a water supply device supplying water to only a plurality of crests of the web, and a starch supply device applying starch to

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<sup>2</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP §2143

the plurality of crests after the water supply has applied water to the plurality of crests, wherein the water and starch combine to form an adhesive joining the first and second webs of medium together. Again, applicants respectfully submit that such elements are not disclosed by the cited art and that therefore the obviousness rejection should be withdrawn in light of the requirements of MPEP §2143.

More specifically, as stated above, the Wallick references clearly fail to disclose such elements in that they simply provide a preformed starch solution to the plurality of tips for joining the corrugated sheet to the facing sheet. Separate water and starch stations are not disclosed or suggested.

Swift, Westphal and Miller are equally lacking. Swift, for example, appears to be one of the original corrugated paperboard patents and uses a sodium silicate solution to bond the layers together, as applied by spraying devices 26 or rollers 29. Even in such an old patent, clearly the idea of applying a preformed adhesive solution to only the flutes of the corrugated board is disclosed. What is not disclosed, the importance which will be defined in further detail herein, is a mechanism wherein water is first supplied and starch is subsequently applied so as to lessen the amount of starch required for the overall operation.

Turning to Westphal, it is not even a paperboard manufacturing patent, but is purportedly of relevance in that it is a corrugated material type of patent, specifically related to sheet metal operations such as the formation of catalytic converters in the automotive industry. In its operation, a powdered coating 14 or liquid coating 14 is applied to the flutes 2 of the corrugated material 1 as by rollers as shown best in Fig. 10. However, as shown in Fig. 4A, the material 14 is drawn from a hopper 93 and is already a preformed powder or liquid coating material 14. Clearly separate devices for first applying water to the flutes, and then applying the starch to the wetting flutes is not disclosed.

Finally, Miller is another corrugated paperboard patent which provides a mechanism by which beads of preformed adhesive 82 can be formed on the flutes or tips 84 of the corrugated board by way of a delivery nozzle 80. Again, however, the adhesive beads are provided in a preformed compound and not by way of first providing water to the flutes 84, and then applying starch to the wetted flutes.

In light of the foregoing, it is clear that the requirement of MPEP §2143 which states that each of the elements of the pending claims must be shown by the cited art is not met. However, even beyond that, applicants respectfully submit that there is no suggestion to modify the references to arrive at the pending disclosure. As stated in the background, a primary objective of the pending application is to lessen the amount of starch required in manufacturing the corrugated board. As stated therein, excess starch only adds to the cost of the corrugated board, and any lessening of the required starch is a desirable characteristic. Moreover, when the starch and water are provided in a "starch solution" as identified by the prior art, the water and starch will tend to dissipate throughout the paper of the web thus detrimentally effecting the efficacy of the adhesive itself and also lending itself to "wash boarding", i.e., forming ripples in the paperboard which detrimentally effects the quality of the board in that high quality printing cannot be performed on such a wash boarded material.

None of these concerns are even identified by the cited art, much less the specific solution of providing a first device for applying water to only the flutes of the corrugated board, and then after the flutes are watered, applying starch to the watered tips. In light of this, applicants respectfully submit that the obviousness rejections based on the cited art should be withdrawn as well. As no other issues are outstanding with respect to remaining claims, applicants respectfully submit that all pending claims, i.e., claims 10, 11, 16, 17 and 35, are in condition for allowance and respectfully requests same. Should the Examiner have any questions, she is respectfully invited to telephone the undersigned.

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Respectfully submitted,

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